

October 20, 2001

Mr. Oliver D. Kingsley, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3 - RELIEF FOR
INSPECTION OF LOW PRESSURE COOLANT INJECTION HEAT
EXCHANGER WELDS (TAC NOS. MB1486 AND MB1487)

Dear Mr. Kingsley:

By letters dated March 14, and August 6, 2001, Exelon Generation Company, LLC (EGC or the licensee) proposed revised alternatives to previously granted relief request CR-05 for the Dresden Nuclear Power Station, Units 2 and 3. Relief request CR-05 granted relief from certain inservice inspection requirements of the 1989 Edition of the American Society of Mechanical Engineers (ASME) Code, Section XI, concerning inspection of selected low pressure coolant injection heat exchanger welds. EGC now proposes that the frequency of the alternative visual inspection be changed from monthly to quarterly.

The Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's submittals. The staff has determined that it is impractical for the licensee to comply with the Code requirements for which relief was requested and EGC's proposed alternatives provide reasonable assurance of structural integrity of the subject welds. Therefore, the requested relief is granted in accordance with 10 CFR 50.55a(g)(6)(i) for the licensee's third 10-year inservice inspection interval for Dresden Nuclear Power Station, Units 2 and 3. The staff has concluded that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. The enclosed safety evaluation contains the basis for this determination.

Mr. O. Kingsley

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The staff notes that Exelon's March 14, 2001, submittal did not clearly describe that what was being requested was a change in the frequency of the alternative visual inspection nor did it include a basis for changing the frequency of the alternative visual inspection. The staff recommends that the licensee review their submittal and incorporate "lessons-learned" for future relief requests.

This completes the staff's effort for TAC Nos. MB1486 and MB1487.

Sincerely,

/RA/

Anthony J. Mendiola, Chief, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-237 and 50-249

Enclosure: Safety Evaluation

cc w/encl: See next page

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Dresden Nuclear Power Station
Units 2 and 3

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Dresden Nuclear Power Station
Units 2 and 3

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The staff notes that Exelon's March 14, 2001, submittal did not clearly describe that what was being requested was a change in the frequency of the alternative visual inspection nor did it include a basis for changing the frequency of the alternative visual inspection. The staff recommends that the licensee review their submittal and incorporate "lessons-learned" for future relief requests.

This completes the staff's effort for TAC Nos. MB1486 and MB1487.

Sincerely,

/RA/

Anthony J. Mendiola, Chief, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-237 and 50-249

Enclosure: Safety Evaluation

cc w/encl: See next page

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* Concurred by Safety Evaluation dated 8/23/1, no significant changes made

** See Previous Concurrence Sheet

ADAMS Accession Number: ML012750270

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELIEF FOR LOW PRESSURE COOLANT INJECTION HEAT EXCHANGER WELDS
THIRD 10-YEAR INTERVAL INSPECTIONS
EXELON GENERATION COMPANY, LLC
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3
DOCKET NOS. 50-237 AND 50-249

1.0 INTRODUCTION

The inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Class 1, Class 2, and Class 3 components is to be performed in accordance with Section XI of the ASME Code and applicable edition and addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states in part that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the licensee demonstrates that: (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) will meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The inservice inspection Code of record for Dresden Nuclear Power Station, Units 2 and 3, is the 1989 Edition of Section XI of the ASME Boiler and Pressure Vessel Code. The third 10-year ISI interval for Dresden, Units 2 and 3, began March 1, 1992.

By letter dated March 14, 2001, as supplemented on August 6, 2001, Exelon Generation Company, LLC (EGC, the licensee) requested relief from certain ultrasonic testing (UT) requirements pertaining to the third 10-year ISI interval at Dresden Nuclear Power Station. Specifically, the licensee's request for relief CR-05 proposed performing a magnetic particle

test (MT) examination and visual testing (VT) examinations in lieu of ultrasonic testing (UT) examinations of selected heat exchanger tubesheet-to-shell welds.

2.0 RELIEF REQUEST CR-05

2.1 Identification of Welds

The Low Pressure Coolant Injection (LPCI) Heat Exchanger tubesheet-to-shell welds affected by this request for relief are: 2-1503A-1, 2-1503A-2, 2-1503B-1, 2-1503B-2, 3-1503A-1, 3-1503-1503A-2, 3-1503B-1, and 3-1503B-2.

2.2 Code Requirements for which Relief is Requested

The licensee is requesting relief from the 1989 Edition of the ASME Code, Section XI, Subarticle IWC-2500, Table IWC-2500-1, Examination Category C-A, Item Number C1.30. The requirement is for essentially 100 percent examination of the weld length using a volumetric examination technique.

2.3 Licensee's Proposed Alternative to Code

Pursuant to 10 CFR 50.55a(g)(5)(iii), the licensee proposed performing a magnetic particle examination of the subject welds each inspection interval in accordance with the extent and frequency examination requirements of Table IWC-2500-1, a VT-2 visual examination at nominal operating pressure each inspection period, and a visual inspection for leakage during the quarterly, rather than monthly, LPCI pump operability test.

2.4 Licensee's Bases for Requesting Relief (as stated)

The LPCI heat exchanger tubesheet-to-shell welds as shown on Figure CR-05.1 are designed with a geometry that provides a corner trap for ultrasonic signals. The geometric reflectors inherent in this design prevent a meaningful ultrasonic examination from being performed on these welds.

An investigation into the feasibility of performing ultrasonic examinations on the subject welds was conducted during the second ten-year interval of the Inservice Inspection Program for Dresden Nuclear Power Station (DNPS), Units 2 and 3. The investigation consisted of building a mock-up of the tubesheet-to-shell weld configuration and attempting to differentiate notches from the geometric corner trap inherent in the design, utilizing various ultrasonic examination techniques. The investigation concluded that a meaningful ultrasonic examination could not be performed on this joint configuration.

Based on the above, DNPS requests relief from the ASME Section XI, Appendix III requirements for the volumetric examination of the LPCI heat exchanger tubesheet-to-shell welds.

3.0 EVALUATION

By letter dated February 18, 1992, the licensee submitted the initial request for relief (CR-05) for the LPCI heat exchanger tubesheet-to-shell welds for the third 10-year ISI interval. The request was granted in a letter to the licensee dated May 19, 1994. In support of the February 18, 1992, relief request, the licensee committed to performing a visual inspection of the LPCI heat exchangers for leakage on a monthly basis. The relief granted in the letter dated May 19, 1994, differs from the current request (dated March 14, 2001) regarding the visual inspection frequency for leakage during the LPCI system operability test. The inspection frequency for the LPCI operability test was changed in the Technical Specifications from monthly to quarterly as authorized in NRC letter dated December 27, 1995. Since the visual inspection is performed by the LPCI operator during the LPCI operability test, the licensee resubmitted the relief request (March 14, 2001) and changed the visual inspection frequency to a quarterly inspection.

The conditions that hindered performing UT examinations in 1992 are still in existence. The condition is inherent in the design of the weld joint. The weld joint connects the tubesheet at an angle perpendicular to the vessel. When examining the weld, the UT produces geometric reflectors that have characteristics similar to cracks. The licensee demonstrated on a mock-up the difficulties associated with differentiating notches from the geometric reflectors. The licensee's ability to discern a crack from the configuration was not possible with the prescriptive Code-required UT techniques used in the demonstration.

The configuration of the subject weld joint also prevented examination with the radiographic method. Therefore, in order for the licensee to perform a Code-required volumetric examination of the weld, the joint configuration would have to be redesigned and new heat exchangers fabricated. Such a redesign and fabrication would impose an excessive burden upon the licensee. The staff believes that the magnetic particle examination and periodic visual examinations will adequately detect degradation, and therefore, assure structural integrity.

4.0 CONCLUSION

Based on the discussion above, the staff concludes that the Code-required UT examinations of the subject LPCI heat exchanger-to-tubesheet welds are impractical. Therefore, pursuant to 10 CFR 50.55a(g)(6)(i), the request for relief CR-05 is granted for the third 10-year ISI interval at the Dresden Nuclear Power Station, Units 2 and 3. This relief is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Principal Contributor: D. Naujock, EMCB

Date: October 20, 2001